

Design Element				Manual Section	2-Lane					
Design Controls	Design Year Traffic (AADT)			40-2.01	< 400	400-≤ AADT < 1000	1000-≤ AADT < 3000	3000-≤ AADT < 5000	≥ 5000	
	Design Forecast Year			55-4.01	20 Years (2)					
	*Design Speed (km/h)			55-4.01	See Section 55-4.01 (3)					
	Access Control			40-5.0	None					
	Level of Service			40-2.0	Desirable: B; Minimum: D					
Cross Section Elements**	Travel Lane	*Width (4)		55-4.05	Des: 3.0 m; Min: 2.7 m (4a)		Des: 3.3 m Min: 3.0 m (4b)	Des: 3.6 m Min: 3.3 m (4c)	Des: 3.6 m Min: 3.3 m (4c)	
		Typical Surface Type		Ch. 52	Asphalt / Concrete / Aggregate					
	Shoulder (5)	Width Usable		55-4.05	Min: 0.6 m	Des: 1.2 m Min: 0.6 m	Des: 1.8 m Min: 0.9 m	Des: 1.8 m Min: 1.2 m	Des: 2.4 m Min: 1.8 m	
		Typical Surface Type		Ch. 52	Asphalt / Aggregate / Earth					
	Cross Slope	*Travel Lane (6)		55-4.05	2%-3% Asphalt / Concrete; 6%-8% Aggregate					
		Shoulder (7)		55-4.05	4%-6% Asphalt; 6%-8% Aggregate; 8% Earth					
	Auxiliary Lanes	Lane Width		55-4.06	Des: Same As Travel Lane Min: 2.7 m		Des: Same as Travel Lane Min: 3.0 m			
		Shoulder Width			Des: 1.2 m; Min: 0.6 m					
	Obstruction Free Zone			55-5.02	See Section 55-5.02					
	Side Slopes	Cut	Foreslope		55-4.05	2:1 or Flatter (8)				
			Ditch Width			(8)				
			Backslope			2:1 or Flatter (8)				
		Fill		55-4.05	2:1 or Flatter (8)					
Bridges**	New and Reconstructed Bridges	*Structural Capacity		Ch. 60	HS-20					
		*Clear Roadway Width (9)		55-6.03	Travelway +1.2 m	Travelway +1.8 m			Full Paved Appr. Width	
	Existing Bridges to Remain in Place	*Structural Capacity		Ch. 60	HS-15 (10)					
		*Clear Roadway Width (11)		55-6.02	6.0 m	6.6 m	7.2 m	8.4 m	8.4 m	
	*Vertical Clearance (Collector Under)	New and Replaced Overpassing Bridges (12)		55-6.0	4.45 m					
		Existing Overpassing Bridges			4.30 m					
	Vertical Clearance (Collector Over Railroad) (13)			Ch. 69	7.00 m					

Des: Desirable; Min: Minimum.

* Controlling design criteria (see Section 40-8.0). ** Selection of the cross section and bridge elements is based on the design year traffic volumes irrespective of the design speed.

GEOMETRIC DESIGN CRITERIA FOR RURAL LOCAL ROADS ⁽¹⁾
(3R Projects)

Table 55-3D

Design Element			Manual Section	2-Lane				
Alignment Elements	Design Speed			50 km/h	60 km/h	70 km/h	80 km/h	90 km/h
	*Stopping Sight Distance		55-4.02	65 m	85 m	105 m	130 m	160 m
				60 m	80 m	100 m	120 m	140 m
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	145 m	170 m	200 m	230 m	270 m
		Stop Maneuver		70 m	95 m	115 m	140 m	170 m
	Passing Sight Distance		42-3.0	Existing	Existing	Existing	Existing	Existing
	Intersection Sight Distance		55-4.06	105 m	130 m	150 m	170 m	190 m
	*Minimum Radii		55-4.03	See Section 55-4.03				
	*Superelevation Rate		55-4.03	See Section 55-4.03				
	*Horizontal Sight Distance		55-4.03	See Section 55-4.03				
	*Vertical Curvature (K-values)	Crest	55-4.04	See Section 55-4.04				
		Sag		See Section 55-4.04				
	*Maximum Grade	Level	55-4.04	10%	9%	8.5%	8%	7%
		Rolling		12%	11%	10.5%	10%	9%
	Minimum Grade		44-1.03	Desirable: 0.5% Minimum: 0.0%				

* Controlling design criteria (see Section 40-8.0).

These standards are to be used for all projects that are classified as 3R. Deviations from controlling design criteria should be covered by an approved design exception. Also, any operational or maintenance changes, permanent or temporary, exclusive of work zone traffic control that in fact create substandard conditions such as by re-striping to obtain added lane(s) by reducing existing lane widths and/or shoulders, must be covered by design exceptions whether or not actual construction or reconstruction is involved.

Design exception requests for Level One design criteria require Chief, Division of Design approval.

GEOMETRIC DESIGN CRITERIA FOR RURAL LOCAL ROADS⁽¹⁾ (3R Projects)

Table 55-3D (Continued)

GEOMETRIC DESIGN CRITERIA FOR RURAL LOCAL ROADS⁽¹⁾
(3R Projects)
Footnotes to Table 55-3D

- (1) Applicability. This table is only applicable to Federal-aid funded projects.
- (2) Design Forecast Year. For resurfacing projects, the pavement should be designed for at least a 10-year design life.
- (3) Design Speed. The minimum design speed should equal a) the anticipated posted speed limit after construction or b) the state legal limit (90 km/h) on non-posted highways.
- (4) Travel Lane (Width). A 3.3-m travel lane should be used where truck volumes exceed 200 trucks per day. In addition, the following will apply:
 - a. Where $V \geq 80$ km/h, the minimum width is 3.0 m.
 - b. Where $V \geq 80$ km/h, the minimum width is 3.3 m.
 - c. Where $V \geq 80$ km/h, the minimum width is 3.6 m.
- (5) Shoulder Width. The following will apply:
 - a. If guardrail is present, the minimum offset from E.T.L. to face of guardrail should desirably be equal to the shy line offset distance, but not less than 1.2 m (see Section 49-5.0 for shy line offsets).
 - b. Usable shoulder width is defined as the distance from the edge of the travel lane to the shoulder break point.
- (6) Cross Slope (Travel Lane). Cross slopes of 1.5% are acceptable on existing bridges to remain in place.
- (7) Cross Slope (Shoulder). Table values are for tangent sections; see [Figure 55-4C](#) for shoulder cross slopes on horizontal curves.
- (8) Side Slopes. Section 55-4.05 provides additional information for side slope criteria.
- (9) Width (New and Reconstructed Bridges). Widths of bridges more than 30 m in length will be analyzed individually. At a minimum, the roadway width of these bridges will be the width of travel lanes plus a 0.6-m right shoulder and 0.6-m left shoulder. Where shoulders are paved, it is desirable to provide the full roadway width across the bridge. See Section 59-1.0 for more information on bridge widths.
- (10) Structural Capacity (Existing Bridges to Remain in Place). Where the AADT ≤ 50 , an HS-10 is acceptable.

- (11) Width (Existing Bridges to Remain in Place). Minimum clear widths that are 0.6 m narrower may be used on roads with few trucks. The clear roadway width should be at least the same width as the approach travelway. For one-lane bridges, the width may be 5.5 m. For bridges of more than 30 m in length, the values in the table do not apply. The acceptability of these bridges will be assessed individually.
- (12) Vertical Clearance (Local Under). Table values include an additional 150-mm allowance for future pavement overlays. Vertical clearances apply from usable edge to usable edge of shoulders.
- (13) Vertical Clearance (Local Over Railroad). See Chapter Sixty-nine for additional information on railroad clearances under highways.